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MEDICATION USAGE PATTERN OF NEWLY DIAGNOSED RHEUMATOID ARTHRITIS (RA) PATIENTS - A THREE-YEAR FOLLOW-UP STUDY

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OBJECTIVES: To describe medication utilization among newly diagnosed rheumatoid arthritis (RA) patients. **METHODS:** A retrospective analysis of administrative claims identified individuals within a large manufacturing company with continuous eligibility for a four-year time frame (2001-2008), using one year as a pre-index period and 3 years for follow-up. New RA patients age 18-62 were identified as (1) free of any medical claims with ICD9 code of 714.xx with no biologic or non-biologic disease modifying anti-rheumatic drugs (DMARDs) in pre-index year; (2) having at least 2 separate medical claims with ICD9 code of 714.xx in the index year. The first claim date was designated as the index date. Patients' pharmacy claims for all possible RA medications were followed for 3 years starting from the index date. **RESULTS:** Among 1769 new RA patients in the study, 69% were females. Average age was 55 in the index year. During the index year, 30% (N=521) of patients started biologic or non-biologic DMARD treatment, 56% (N=985) received pain medications but no DMARDs, and 14% (N=263) did not have prescriptions for either DMARDs or pain medications. However, in year 3, 25% (N=444) received DMARDs, 47% (N=838) received pain medications only, and 28% (N=487) did not have prescriptions for either. Among 521 who started DMARD treatment in Year 1, 71% (N=368) remained on DMARDs in Year 2, and 58% (N=300) remained on DMARDs for all 3 years. **CONCLUSIONS:** In the first 3 years of onset of RA, 25-30% of patients received biologic or non-biologic DMARD treatments in each year. Most patients starting DMARDs stay on treatment for multiple years. A substantial portion of patients, however, do not remain on DMARD treatment. This demonstrates that unmet needs may remain with currently available biologic and non-biologic DMARDs. Future research should differentiate utilization patterns of biologic and non-biologic DMARDs.

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ANALYZING THE DIFFERENCE IN HEALTH CARE COSTS OF RHEUMATOID ARTHRITIS PATIENTS SWITCHING OR DOSE ESCALATING ANTI-TNF BIOLOGICS USING COMBINED PROPENSITY SCORE MATCHING AND MULTIVARIATE REGRESSION MODEL

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OBJECTIVES: To compare anti-tumor necrosis factor biologic (anti-TNF) dose escalation vs. switching in matched rheumatoid arthritis (RA) patient populations. **METHODS:** Adult RA patients (ICD-9: 714.XX) treated with anti-TNFs were identified from a US claims database (6/2004-6/2009). Patients who switched therapy or escalated their dose were identified between the anti-TNF index date and June 2008. All-cause and RA-related health care costs were calculated during the 12-months after switch or dose escalation. To arrive at comparable populations, propensity score matching (PSM) followed by generalized linear regression models (GLM) were employed. PSM does not assume any specific relationship between outcome and covariates, therefore, GLMs with gamma distribution and log link were applied to the matched sample to further adjust for any remaining bias. **RESULTS:** Among 2587 eligible patients, 1229 switched to another anti-TNF and 1358 escalated their dosage. In the unadjusted sample, all-cause and RA-related healthcare costs were significantly lower for patients that switched therapy. After adjusting for baseline differences with PSM, all-cause and RA-related total health care costs, including medication, were not statistically different for switchers versus dose escalators (All-cause: $32,959 vs. $34,225, $p=0.19$; RA-related: $19,447 vs. $20,130,$p=0.17$). When GLM was applied over the matched PSM population to adjust for remaining differences, all-cause healthcare costs were not statistically different but RA-related costs were significantly higher for those that switched therapies versus those that dose escalated (All-cause; $32,493 vs. $31,885, $p=0.48$; RA-related: $20,341 vs. $17,667, $p<0.01$). **CONCLUSIONS:** Using a combined PSM/GLM model, for RA-related costs, conclusions comparing switching therapy vs. dose escalating therapy completely reverse once patient populations are properly adjusted, such that dose escalating is less costly in matched patients. This demonstrates the importance of adjusting for differences in anti-TNF treated populations in comparative effectiveness research.

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PATIENT CHARACTERISTICS AND GOLIMUMAB UTILIZATION IN RHEUMATOID ARTHRITIS, PSORIATIC ARTHRITIS, AND ANKYLOSING SPONDYLITIS PATIENTS

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OBJECTIVES: To characterize patients with rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS) initiating golimumab (GLM) and to analyze GLM utilization. **METHODS:** Data were from the MarketScan® Research Database. Inclusion criteria were diagnosed RA, PsA, or AS, aged ≥18 years at first diagnosis, a GLM claim between April 24, 2009 and December 31, 2010, and continuous enrollment with ≥6-months prior and ≥3-months after first GLM claim. **RESULTS:** Of the 1732 GLM patients analyzed, 1215 were diagnosed with RA, 375 with PsA, and 142 with AS. The most common co-morbidities were osteoarthritis (51.1%), hypertension (44.8%), hyperlipidimia (27.8%), depressive disorders (20.0%), and gastroesophogeal reflux disease (GERD; 18.5%). Of GLM patients 431 (24.9%) were naïve to biologics (bio-naïve), and 1301 (75.1%) had previous biologic experience (bio-experienced). Bio-experienced patients had prior experience with etanercept (57.2%), adalimumab (53.4%), infliximab (24.4%), abatacept (11.3%), and other biologics (7.1%). Of patients with ≥2 refills of 28-31 day supply of GLM (n=1101), mean ± SD number of days between all fills was 33.7 ± 15.6 days with a median of 30 days. There was no dosing difference between bio-naïve and bio-experienced patients. The majority of patients (81.3%) filled their drug within the 21-38 day compliance window; 1.9% filled within 20 days and 16.8% filled outside the 38 day window. Among patients with 12 months of data after initiating GLM (n=347), switching rate to another biologic therapy in the study period was 23.2% among bio-naïve and 38.5% among bio-experienced. **CONCLUSIONS:** In this analysis, the majority of GLM patients are bio-experienced and have switched mainly from other anti-TNFs. Observed refill patterns of GLM are consistent with labeled every four week dosing.and were similar for bio-naïve and bio-experienced patients. Bio-naïve patients, however, are less likely to switch to another biologic during the 12-month period post initiating GLM than bio-experienced patients.

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MODELING FUTURE PREVALENCE OF ARTHRITIS AND DEMAND FOR PHARMACEUTICALS

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OBJECTIVES: Accurately forecasting future disease prevalence and resulting demand for pharmaceuticals requires modeling changes in demographics, economic considerations, health care policy, disease risk factors, and treatment options. This study forecasts future arthritis prevalence and related use of prescribed medications. **METHODS:** Using a microsimulation approach, we model future arthritis prevalence and pharmaceutical use for each person in a stratified random sample of the US population. The population database combines 1) population and economic data from the American Community Survey; 2) health status and disease risk factors from the Behavioral Risk Factor Surveillance System; and 3) patient health data from National Nursing Home Survey. Logistic regression analysis with the Medical Expenditure Panel Survey models the propensity of people with arthritis to use prescribed medications for arthritis. Forecasts through 2030 consider trends in household income and demographics. One scenario models expansion of medical coverage under the Affordable Care Act (ACA). **RESULTS:** In 2010, 47.1 million people (15% of US population) had diagnosed arthritis. Of these, 56% used prescription medications to treat their condition. The Medicare population comprised 46% of the population with arthritis, but 50% of patients taking medications for arthritis. Between 2010 and 2030 the number of people with arthritis will grow by 28%, but the number taking prescribed medication for arthritis will grow by 25%. An estimated 13% of the population with arthritis is uninsured, and a portion of this population will become insured in 2014 under the ACA, causing an 11.6% increase in the use of prescribed medicines in this population. **CONCLUSIONS:** Prevalence rates for diagnosed and treated arthritis are projected to grow at similar rates over the next 20 years. The implementation of the ACA will increase the number of persons utilizing pharmaceutical treatment for arthritis by 1.6%.

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FACTORS PREDICTING PAIN MEDICATION SELECTION AMONG PATIENTS WITH OSTEOARTHRITIS

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OBJECTIVES: Many types of pain medications are commonly used in treating osteoarthritis (OA). The purpose of this study was to identify the demographic and clinical factors associated with the choice of pain medications between duloxetine and other pharmacological agents among OA patients. **METHODS:** A retrospective cohort study was conducted using a claims database. OA patients who initiated duloxetine, anticonvulsants, antidepressants, muscle relaxants, non-steroidal anti-inflammatory drugs (NSAIDs), opioids, or steroids from November 1, 2010 to March 31, 2011 were selected. The dispense date of the first initiated medication preceded by at least a 90-day gap in medication supply was defined as the index date. Comorbidities and prior medication use was assessed during 6 months prior to the index date. Multiple logistic regression models were performed to identify predictors of initiating duloxetine versus other pain medication. Models were estimated with different sets of predictors: 1) Charlson comorbidity index (CCI) score and use of selected medications, and 2) individual comorbidities and number of unique pain medications in the prior six months, respectively. **RESULTS:** We identified 96,666 OA patients (mean age 65.2 years; 64.5% female) who initiated opioids (41.6%), NSAIDs (21.8%), steroids (15.4%), muscle relaxants (7.7%), antidepressants (7.5%), anticonvulsants (3.9%), or duloxetine (2.1%). Patients who initiated anticonvulsants and duloxetine had the highest CCI scores, were on more medications and had more inpatient stays prior to initiation than patients initiating other medications. Males were in general less likely to initiate duloxetine than the other medications. Higher CCI (except for comparing with anticonvulsants) score and prior use of pregabalin, gabapentin, antidepressants, muscle relaxants, and steroids were associated with a higher likelihood of initiating duloxetine. Patients who had more than 10 unique medications, depression, or anxiety were more likely to initiate duloxetine. **CONCLUSIONS:** Presence of selected demographics, comorbidities and prior use of medications were associated with duloxetine initiation among OA patients.